EUROPEAN BANKING EDITION

Value pools, live use cases, reference architecture and the compliance clock — in fifteen slides.

01 The economic case — $200–340B a year at stake

02 Use cases already in production in EU banks

03 Reference architecture and deployment choices

04 The EU AI Act timeline and your control set

Data as cited from McKinsey Global Institute, EBA and ECB publications (2023–2026).

2026

A BRIEFING FOR BANK TECHNOLOGY LEADERS

Generative AI in Banking

Where the value is, how European banks are deploying it, and what the EU AI Act demands of your architecture.

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EXECUTIVE FRAMING · WHY NOW

Generative AI is moving from experiment to core banking infrastructure — and in Europe, regulation now sets the pace of adoption.

THE VALUE IS MEASURED

The McKinsey Global Institute sizes generative AI at **$200–340 billion of annual value** for global banking — 2.8–4.7% of industry revenues, mostly from productivity.

McKinsey Global Institute, Capturing the full value of generative AI in banking, Dec 2023.

ADOPTION IS ALREADY BROAD

The EBA observes **92% of EU banks already deploying AI**; around **40% use general-purpose AI**, concentrated in customer support and internal processes.

EBA, Rising application of AI in EU banking and payments, Sep 2025.

THE RULES HAVE DATES

The EU AI Act is already in force. **High-risk obligations — which cover credit scoring — apply from August 2026.** Architecture choices made now decide compliance cost later.

Regulation (EU) 2024/1689 (AI Act); creditworthiness assessment is listed as high-risk in Annex III.

A Productivity Opportunity the Size of a Business Line

MGI estimates the annual value generative AI could add across the global banking sector if use cases were fully implemented.

$200–340B

ANNUAL VALUE POTENTIAL · GLOBAL BANKING · FULL IMPLEMENTATION SCENARIO

Equal to **2.8–4.7% of total industry revenues** and **9–15% of operating profits**, largely from increased productivity. Banking is among the sectors with the largest opportunity relative to revenue.

LARGEST ABSOLUTE GAINS BY SEGMENT

$56B	corporate banking, per year
$54B	retail banking, per year

WHAT THAT MEANS FOR A BANK P&L

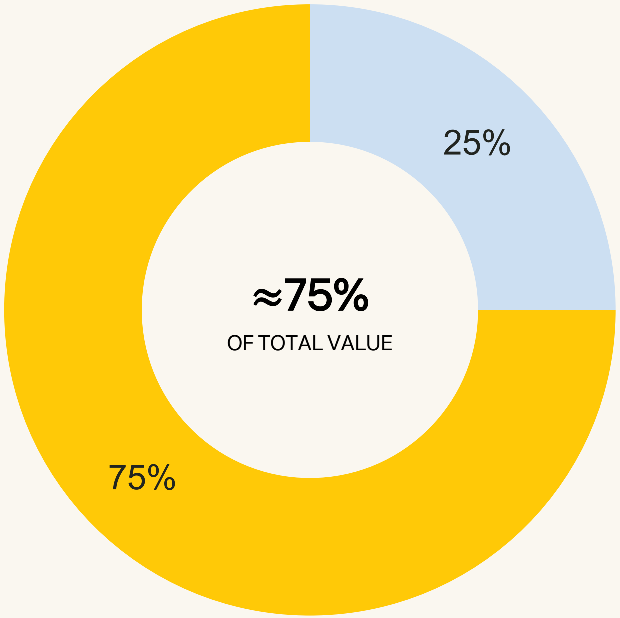
Two-thirds of senior digital and analytics leaders at a 2023 McKinsey forum said gen AI will fundamentally change how they do business. The first pilots target productivity because banking economics are under pressure — but the same models can reshape distribution and service models.

Source: McKinsey Global Institute, Capturing the full value of generative AI in banking (Dec 2023) and Scaling gen AI in banking (Mar 2024).

WHERE THE VALUE CONCENTRATES · FUNCTION MIX

Four Functions Carry About 75% of the Value

Across 63 use cases in 16 business functions, the bulk of generative AI's value sits in four areas — all of them core to banking.



THE FOUR PRIORITY FUNCTIONS

Customer operations

Chat and voice assistants, agent support, call summarisation.

Marketing and sales

Personalised offers, content generation, next-best-action.

Software engineering

Code generation, testing, documentation, legacy migration.

R&D

Research synthesis, product design, knowledge discovery.

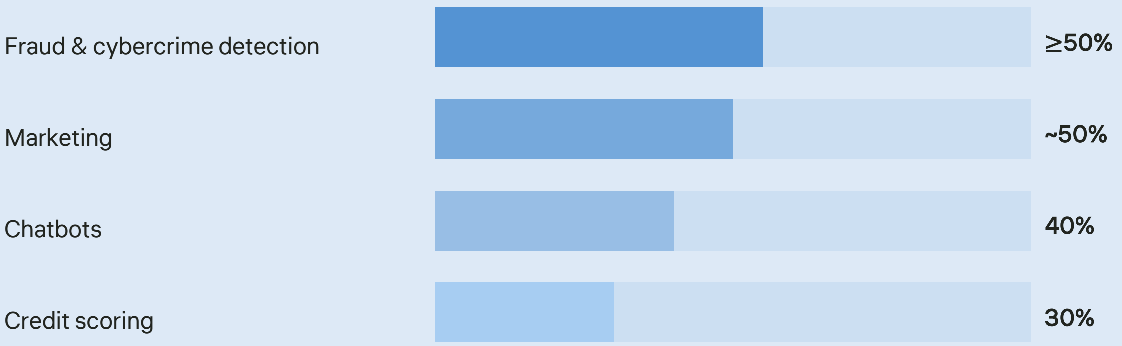
Source: McKinsey, The economic potential of generative AI, Jun 2023. Split within the 75% not disclosed by source.

EUROPEAN ADOPTION · ECB & EBA EVIDENCE

Generative AI Is the Current Wave — and Banks Are Riding It

AI in euro area banking is nothing new — earlier waves built fraud detection and scoring. Generative AI is the present wave, and it is already entering production.

SHARE OF SIGNIFICANT EURO AREA BANKS USING AI, BY USE CASE



Values as stated by the ECB (">more than half", "around 50%"), significant institutions, 2025 observations. Bars scaled to 100% track.

~90%

of significant euro area banks already use AI technologies (ECB, 2025 data).

~40%

of EU banks already use general-purpose AI — led by customer support and internal processes (EBA RAQ, autumn 2024).

55%

of surveyed banks use GPAI or agentic AI in consumer-facing processes (EBA sample, 2025).

Sources: [ECB, "AI and the euro area economy"](#) (Mar 2026); [EBA special topic on AI](#) (Sep 2025).

USE CASES

SECTION · WHERE GENERATIVE AI WORKS

Three domains already deliver measurable value in production: customer operations, software engineering, and risk & compliance.

What follows is grounded in use cases the EBA actually observes in EU banks — not a vendor wish list.

USE CASES

USE CASE 01 · CUSTOMER OPERATIONS

Customer Support Is the First Production Beachhead

Customer-facing and internal support is where EU banks deploy general-purpose AI most — because volumes are high, text-heavy, and quality is measurable.

VIRTUAL ASSISTANTS & CHATBOTS

Gen AI assistants resolve customer queries and answer employees' questions on internal policies and procedures. ECB data show **40% of significant banks** already run chatbots; digital and voice assistants are among the most common GPAI uses the EBA observes.

AGENT ASSIST & CALL SUMMARISATION

Models transcribe and summarise contact-centre audio, assess interaction quality, and draft next-best responses for operators. The EBA lists call-centre transcription and agent assistance among the GPAI uses reaching significant adoption.

SELF-SERVICE GUIDANCE

Automated guidance and financial-education tools (FAQs, Q&As) let customers self-serve routine digital actions.

WHY THIS DOMAIN FIRST

Measurable quality. Resolution rate, handle time and customer satisfaction give a clean before/after read — rare for AI projects.

Contained risk. Queries sit outside regulated decision-making, so early deployments rarely trigger high-risk obligations.

WHAT THE SUPERVISORS SEE

The EBA's most common consumer-facing GPAI uses include assisting service agents, automating information for self-service, and voicebot assistants. Fraud detection and notification to customers is also high on the list.

Around **10% of EU banks** are still testing GPAI in further areas such as AML and client profiling before production use.

Sources: EBA special topic on AI (Sep 2025); ECB speech (Mar 2026).

USE CASE 02 · SOFTWARE ENGINEERING & IT

Your Own Developers Are the Fastest Payback

Coding assistance is a leading GPAI use case in EU banks — and it compounds: faster delivery accelerates every other AI initiative on the roadmap.

CODE GENERATION & REVIEW

The EBA observes banks using GPAI to generate new code from natural language, detect errors, and support testing — concentrated in technology and operations units.

LEGACY MODERNISATION

Converting code between languages and helping migrate legacy systems — a structural problem in European core banking estates — is an explicit GPAI use case in the EBA's survey.

DOCUMENTATION & KNOWLEDGE

Summarising technical documentation, drafting runbooks and meeting minutes, and improving internal IT applications.

WHY TECHNOLOGY DIRECTORS LEAD HERE

Data stays inside. Coding assistants can run against internal repositories under your own access controls — no customer data leaves the perimeter.

Skills transfer. The same platform, guardrails and prompt discipline built for developers become the template for every other domain.

INVESTMENT CONTEXT

>€4B

Realised 2025 investment in digital technologies (incl. AI) by significant euro area banks in aggregate — ~1.3% of total tangible assets (ECB). Banks build in-house where AI touches proprietary knowledge such as credit scoring and customer analytics.

Sources: EBA special topic on AI (Sep 2025); ECB speech (Mar 2026).

USE CASE 03 · RISK, COMPLIANCE & LEGAL

The Quiet Revolution Is in Documents

Risk and legal teams are text factories. Generative AI's ability to read, compare and draft is applied to regulation monitoring, legal analysis and control documentation.

LEGAL & REGULATORY ANALYSIS

The EBA lists legal analysis among observed GPAI uses: monitoring legal and regulatory change, summarising court rulings, assessing the impact of contractual clauses and proposing new clauses and conditions.

AML & FRAUD INTELLIGENCE

AI already supports fraud and AML/CFT detection — the most widespread AI use in euro area banks (**>50%**). Around **10% of EU banks** are testing GPAI specifically for AML/CFT and client profiling (EBA RAQ).

DRAFTING & SUMMARISATION

Regulatory-report drafts, audit preparation, and summarising long internal documentation — efficiency gains the EBA sees driving adoption.

THE BOUNDARY THAT MATTERS

Drafting and summarising is low-risk assistance. **Deciding is not.** Under the EU AI Act, AI used to evaluate creditworthiness or set credit scores is high-risk (Annex III) — with conformity, data-governance, human-oversight and logging duties from August 2026.

Keep GPAI in the read-and-draft role for regulated decisions until your conformity framework is proven.

WHERE GPAI STANDS IN RISK TODAY

EBA RAQ (autumn 2024): GPAI adoption is significant in customer support and internal-process optimisation; AML, profiling and risk modelling remain mostly in testing. Supervisors explicitly flag hallucinations and inappropriate or inaccurate output as reputational and litigation risks.

Sources: EBA special topic on AI (Sep 2025); Regulation (EU) 2024/1689, Annex III 5(b).

ARCHITECTURE · ONE GATEWAY, MANY MODELS

One Governed GenAI Gateway Serves Every Use Case

EU banks typically combine one to three deployment approaches. A central gateway keeps control consistent however models are sourced.

EXPERIENCE LAYER

Customer channels (app, web, voice) · employee desktops — service, risk, legal, engineering

GENAI GATEWAY

Model routing · prompt & output guardrails · **RAG orchestration** over verified sources · identity, consent & entitlement checks · full logging for audit and AI Act record-keeping

Third-party, cloud API
Most common approach — flexibility and scale (EBA).

Third-party, on-premises
Open-source models inside the bank perimeter — more control, more skills needed.

Proprietary models
Built in-house — rare; reserved for core proprietary knowledge.

DATA & KNOWLEDGE

Curated documents, policies, product terms, customer data — governed, consented, quality-controlled; fine-tuning only where it beats RAG.

GOVERNANCE, EVERY LAYER

Model risk management
Inventory, validation and monitoring of every model and use case.

AI Act conformity
Classify each use case; high-risk flows get data governance, human oversight, logging.

DORA vendor oversight
Third-party model and cloud dependencies in the ICT register, with exit plans.

Data protection
GDPR consent and purpose limitation before any customer data reaches a model.

Deployment approaches per EBA special topic on AI (Sep 2025); diagram is an illustrative reference architecture.

SOURCING · BUY, BLEND OR BUILD

Most Banks Buy Access; Few Should Build Models

The EBA finds most EU banks deploy GPAI through third-party cloud APIs, combine one to three approaches, and almost never build proprietary foundation models.

THIRD-PARTY VIA CLOUD APIs

Most common. Large model developers' APIs give flexibility and scalability. Choose for speed, breadth of capability and elastic cost. Manage concentration and data-routing risk through the gateway and DORA oversight.

Used by most respondent EU banks (EBA)

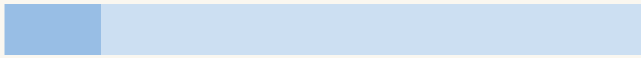
THIRD-PARTY, ON-PREMISES

Growing control play. Open-source models inside your perimeter maximise control over data security and compliance — and can improve cost-effectiveness — but demand scarce in-house skills and infrastructure.

A lower proportion of banks (EBA)

PROPRIETARY MODELS

Exception, not default. Only a small number of respondent banks develop their own GPAI models — financial and technical resources are the binding constraint. In-house effort concentrates on use cases tied to proprietary knowledge: credit scoring, customer analytics.



Only a small number of banks (EBA)

Bar lengths are qualitative (most / lower / few) — the EBA publishes no per-approach percentages. Banks commonly combine 1–3 approaches; RAG and fine-tuning adapt models to specific applications.

Source: EBA special topic on AI (Sep 2025); ECB speech (Mar 2026).

REGULATION · THE EU AI ACT CLOCK

Compliance Has a Calendar — Plan Backwards from 2026

Regulation (EU) 2024/1689 phases in over three years. Credit scoring is high-risk territory; penalties reach €35m or 7% of global turnover.

IN FORCE Aug 2024	PROHIBITIONS Feb 2025	GPAI OBLIGATIONS Aug 2025	HIGH-RISK DUTIES Aug 2026	EMBEDDED / LEGACY Aug 2027
AI Act enters into force. Governance structures and national authorities are set up. Start your use-case inventory now.	Ban on prohibited practices (e.g. manipulative or exploitative techniques) applies, plus the AI-literacy duty for staff.	Obligations for general-purpose AI models and governance rules apply — relevant when you integrate GPAI from providers.	**High-risk obligations apply.** Covers AI for creditworthiness assessment and credit scoring (Annex III): data governance, human oversight, logging, conformity.	Extended deadlines for AI embedded in regulated products and certain legacy systems conclude the phase-in.

WHAT THIS MEANS FOR YOUR 2026 PLAN

Classify every gen AI use case by risk tier before it ships. Anything touching credit decisions needs the full high-risk control set designed in — retrofitting conformity is slower and more expensive than building it into the gateway from day one.

ALSO ON YOUR DESK · DORA

In force since **17 January 2025**: ICT risk management, incident reporting and third-party registers apply to AI vendors and cloud model APIs alike.

Source: Regulation (EU) 2024/1689 (AI Act), application dates per Art. 113; Regulation (EU) 2022/2554 (DORA).

RISK & CONTROLS · THE SUPERVISOR'S CHECKLIST

Every EBA-Flagged Risk Has an Architectural Answer

The EBA's observed challenges for GPAI map directly onto control decisions you make in the platform — before the first customer sees an output.

RISK, AS OBSERVED BY THE EBA		CONTROL, BUILT INTO THE PLATFORM
Hallucinations and inaccurate output — reputational and litigation risk when customers act on wrong information.	➡	**Ground every answer.** Retrieval-augmented generation over verified sources only; block free-form generation in customer flows; human review for consequential replies.
Input-data quality, governance and consent — poor data in, indefensible output out; training on customer data without consent.	➡	**Curate the knowledge base.** Owned, versioned, quality-checked corpora; GDPR consent and purpose limitation enforced at the data layer, not the prompt.
Reliance on third parties — concentration on a few large model providers; weak exit options.	➡	**Model routing as insurance.** Gateway abstracts providers; at least two qualified models per critical flow; DORA register, exit plans and portability tests.
Opaque logic — consumers lack clear, meaningful explanations of AI-driven outcomes.	➡	**Explain by design.** Log prompts, sources and outputs; generate customer-facing reason statements from the same record.

Source: risk list per EBA special topic on AI (Sep 2025); controls are illustrative practice.

ROADMAP · 24-MONTH DELIVERY CHAIN

Foundation, Scale, Industrialise — One Connected Path

A pragmatic sequence that moves from proof to production while the AI Act's high-risk deadline approaches.

PHASE 1 · FOUNDATION Months 0–6	PHASE 2 · SCALE Months 6–18	PHASE 3 · INDUSTRIALISE Months 18–24
Gateway MVP routing, guardrails, logging live	**3 use cases** in production: service, engineering, documents	**Conformity** high-risk flows proven before Aug 2026
Full inventory every use case classified by AI Act risk tier	**RAG platform** curated corpora with ownership and quality gates	**Model ops** validation, monitoring and retraining as routine
First domain developer coding assistants, measured baseline	**Second model** per critical flow — concentration risk reduced	**Unit economics** cost per resolved contact / per delivered feature

INVESTMENT POSTURE, EU BANKS TODAY

EBA RAQ (autumn 2024): more than half of respondent banks plan to invest up to 0.25% of equity in GPAI; around **21% plan above 0.25% of equity** — measured commitment, not blank cheques. Significant euro area banks invested over €4 billion in digital technologies including AI in 2025 (ECB).

Sources: EBA special topic on AI (Sep 2025); ECB speech (Mar 2026). Roadmap is illustrative.

DIRECTION · WHAT TO DO ON MONDAY

Build the platform once. Then scale use cases into it — with the AI Act's clock as your planning horizon.

PRIORITY 01

Stand up the GenAI gateway. Routing, guardrails, RAG and logging as shared infrastructure — not rebuilt per use case.

PRIORITY 02

Pick three measurable use cases. Start where the EBA sees production today: customer support, coding, document work.

PRIORITY 03

Classify before you build. AI Act risk tiering in the intake process; high-risk conformity ready before August 2026.

SOURCES USED IN THIS DECK

McKinsey Global Institute — Capturing the full value of generative AI in banking (Dec 2023); The economic potential of generative AI (Jun 2023); Scaling gen AI in banking (Mar 2024).
European Banking Authority — Rising application of AI in EU banking and payments (Sep 2025). European Central Bank — AI and the euro area economy (Mar 2026). Regulation (EU) 2024/1689 (AI Act); Regulation (EU) 2022/2554 (DORA).

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